

4 articulate arm comprising an active joint and an actuator for spinning the surgical instrument,
5 the output signals for actuating said active joint to move the surgical instrument about the pivot
6 point and for actuating said actuator to spin the instrument.--

REMARKS

Applicant is seeking to provoke an interference with each of U.S. Patent Nos. 5,762,458; 5,878,193; 5,855,583; 5,815,640; and 5,907,664. Claims 106, 108-110, 114, 117, 128, 133-137, 140, and 146 have been canceled to simplify the complex issues raised in this application, and applicant reserves the right to pursue this subject matter in this or a subsequently filed application. Claims 107, 111-113, 115, 116, 118-127, 129-132, 138, 139, 141-145, and 147-151 are pending. Claims 144 and 145 have been found allowable, and claims 119-121 have been found to define subject matter patentable to applicant. As applicant has amended these claims to comply with the Examiner's requirements of form, and as these allowable claims correspond (substantially or exactly) to claims of the '583 and the '664 patents, applicant has satisfied all requirements for provoking interferences with each of these two patents.

Of the pending claims, claims 107, 111-113, 115, 116, 118, 122-127, 129-132, 138, 139, and 141-143 were rejected under 35 U.S.C. §112, first paragraph; under 35 U.S.C. §135(b); and/or as allegedly being unpatentable over the cited art. To establish that applicant is also entitled to an interference with each of the '458, the '193, and the '640 patents (in addition to interferences with the '583 and '664 patents), applicant 1) files herewith a declaration of J. Kenneth Salisbury, Jr. to show that the original specification includes support for certain claim elements; 2) adds dependent claims 147-151 which are allowable based on the prior indicated allowable claims; and 3) traverses and/or overcomes at least some of the previous rejections. In light of these amendments and remarks, and in light of the attached declaration, applicant respectfully requests reexamination and reconsideration of rejected claims 107, 111-113, 115, 116, 118, 122-127, 129-132, 138, 139, and 141-143, and requests examination and consideration of newly added claims 147-151. Applicant further requests that interferences be declared between the present application and each of U.S. Patent Nos. 5,762,458; 5,878,193; 5,855,583; 5,815,640; and 5,907,664.

Examiner Interview

Applicant thanks the Examiner and the Examiner's supervisor for the courtesy shown applicant's undersigned representative and David Shaw in an interview conducted on April 20, 2000. Applicant showed a video and discussed the support in the originally filed application for the claimed elements. Interpretation of the claim elements was also discussed, as well as timing for filing of claims corresponding and substantially corresponding to the claims of issued patents. The Examiner stated that further consideration of the issues raised in the interview would be given after filing of this Amendment, and agreement was not reached at that time.

Informalities and Objections

Claims 119-126, 139, and 141 were objected to for various informalities and matters of form, and have been amended to correct those informalities and/or to place claims in independent form as requested by the Examiner.

Amendment to the Specification

Applicant has amended the specification to provide clear antecedent basis for the "shaft" element recited by, for example, prior claim 114. As the originally filed specification clearly provided substantive support for the claim language, no new matter has been added.

SUBSTANTIVE ISSUES

For the Examiner's reference, the following table sets for the issues addressed by the remainder of the Amendment and the pages on which those issues are addressed.

Issue	Page Number
I. Rejections under 35 U.S.C. §112, ¶ 1	12
A. "Original Position"	12
B. Articulate Electrocautery Instruments	16
C. Linear / Rotational Actuation	18
II. Rejection under 35 U.S.C. §135(b)	20
A. Background	20
B. McGrew Does Not Support Rejection	21
C. '640 Patent Cannot Be Disregarded	23
D. Resolving the Issue in Applicant's Favor Makes Sense	23

E. Conclusion	25
III. Arguments re Prior Art Rejections	25
IV. Correspondence of Allowable Claims	26
A. Passive Joint	26
1. Claims 111 and 112 are Allowable	27
2. Claims 111 and 112 Substantially Correspond to Claims 7 and 8 of the '458 Patent	28
B. The Added Claims	29
V. Initiation of Interference Proceedings	30
VI. Conclusion	32

I. REJECTIONS UNDER 35 U.S.C. §112, FIRST PARAGRAPH

Claims 106-112, 115, 122, 131, and 138-141 were rejected under 35 U.S.C. §112, first paragraph, as allegedly not being supported by sufficient written description of the claimed subject matter in the originally filed specification. Such rejections are traversed in-part and overcome in-part as follows.

As a preliminary matter, applicant acknowledges that claims 106-112 have been rejected for the alleged lack of a written description of the specific "passive joint" element. Applicant has canceled claim 106 and 108-110, and has amended claims 107 and 111 so that they (and claim 112) depend from claim 113. As discussed below regarding correspondence of the pending claims to the claims of the patents, the passive joint element is an "immaterial limitation" as that phrase is used in interference practice, so that applicant has now established all requirements to provoke an interference with the '458 patent.

Regarding the other rejections under §112, first paragraph, applicant will address the remaining issues detailed on pages 4-6 the Office Action of February 11, 2000 in the order they were raised. Specifically, the following sections identify support in the '930 application for the "original position" element, for articulate electrocautery instruments, and for linear/rotational actuation.

A. ORIGINAL POSITION

Claim 115 recites a method for allowing a user to remotely control a movement of a surgical instrument, in which a movement of the surgical instrument is computed based on both a command provided by the user and the "original position" of the surgical instrument.

Similar "original position" limitations are included in each of claims 115 and 138-141, copied from U.S. Patent Nos. 5,878,193 and 5,815,640 respectively.

In the Office Action mailed on February 11, 2000, the Examiner expressed concern that the '930 application "fails to teach or suggest computing the movement of a robotic instrument based on both the input command and the original position." Office Action at 4, 5. More specifically, in rejecting these "original position" claims under 35 U.S.C. §112, first paragraph, the Examiner commented that the claims contained subject matter which was

not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Office Action at 3.

For the reasons given below, it is respectfully submitted that applicant has satisfied this legal standard, and thus that this rejection under section 112, first paragraph, should be withdrawn.

To address the Examiner's concerns regarding support for the claimed use of the "original position," applicant respectfully refers the Examiner to "Modern Control Engineering" ("Ogata"), a well-known reference in control systems engineering and robotics, and to the **Declaration of Dr. J. Kenneth Salisbury, Jr.**, filed herewith. As explained in detail by Dr. Salisbury, while the specification of the '930 application may not contain the verbatim wording used in the claims of the '193 and '640 patents, the '930 application explicitly discloses both functionality and apparatus that necessarily and inherently perform the functions recited by the claims.

The Ogata reference, recognized as a classic text in basic systems control, establishes that the term "servomechanism" *necessarily* connotes a closed-loop, feedback mechanism, and Dr. Salisbury and Ogata both confirm that is how the term "servomechanism" is understood in the field of robotics and telerobotics. Salisbury Decl. ¶¶ 13-16, 17-20. The only remaining inquiry, then, is whether the '930 specification necessarily discloses a *position* feedback servomechanism, as in the "original position" feedback of the '640 and '193 patents. The conclusion that the specification *does* support such claim limitation, and *does* convey the

applicant's possession of this element of the invention when the application was filed, is inescapable.

Turning to the '930 specification, with emphasis added, the originally filed specification for the present application explicitly discloses that the robotic manipulator arms may include position encoders:

Hand-operated control means and *manipulators* of different types *may be employed using* a wide variety of well-known mechanisms and electromechanical elements including, for example, . . . *optical or electromagnetic position encoders*, Page 21, lines 29-35; Salisbury Decl. ¶¶ 12.

Those of skill in the art would recognize that robotic systems make use of such position encoders as sensors for generating signals indicating the position of the robotic arm. In fact, the text of the application specifically further indicates that the robotic servomechanism of the described robotic surgical system controls robotic arm position:

Right and left controllers 72R and 72L are included in a *servomechanism* system wherein mechanical motion of control arms 76R and 76L *controls the position* of manipulator arm 34R and 34L, Page 9, lines 20-23.

Hence, the application discloses that the robotic manipulator arms can include structures to detect manipulator arm position, and that the overall servomechanism controls the position of the robotic arm. Taking these two passages in light of the Ogata reference, the specification clearly provides support for: 1) the use of robotic systems having feedback controllers (through the use of the term "*servomechanism*,"); 2) the use of manipulators having **position** encoders; and 3) that the servomechanism feedback system is a **position** controller. In light of this disclosure, those of skill in the art would recognize that applicant had described a surgical robot having position feedback.

Furthermore, the specification stresses over and over again that the inventions disclosed within the '930 application are *not limited* to any one particular servomechanism, but encompass all prior art servomechanisms (emphasis added):

Servomechanisms for control of mechanical motion at a remote location are well known, including those which provide force and torque feedback from the manipulator to the hand-operated controller means. *Any suitable prior art servomechanism may be used in the practice of the present invention*, with those incorporating force and torque feedback being particularly preferred for telepresence operation of the system.” Page 9, line 28 to page 10, line 1.

Controller 140 and manipulator 142 are included in a system such as shown in Figs. 7, 8 and 9 which includes a second controller and manipulator for use by the operator’s right hand, *and associated servomechanism means of any suitable type, not shown, for remote control of the manipulators* by the hand-operated controllers. Page 18, lines 27-32.

Also, as noted above, *servomechanisms of many different types are well known in the robotic and teleoperator system arts, and the invention is not limited to any particular type*. Those that include force and torque feedback to the operator are preferred to contribute to a telepresence sense of operation. Page 22, lines 19-24.

Regarding the known robotic systems referred to in the above quotes, Dr.

Salisbury confirms that position feedback control of robotic mechanisms has been well known for decades. Salisbury Decl. ¶¶ 13-16. Ogata’s example (in Ogata Fig. 1-3, discussed in Dr. Salisbury’s declaration) of a simple closed-loop control system that utilizes position sensors to feedback sensed information about a robotic arm’s position further supports this fact. Id. ¶¶ 17-20. Moreover, not only has position feedback control been well known for decades, it has been by far the most commonly implemented type of servomechanical control of robotic mechanisms. Id. ¶ 21.¹

¹ It may be worth mentioning that while several of the above quotes mention “torque and force feedback,” those references deal only with the concept of providing the surgeon with the greatest sense possible of telepresence or immersion in the surgical field – hence the language “feedback *to the operator*.” Importantly, these references do *not* bear on what information is fed back to the control mechanism (as opposed to the operator) for positioning the robotic arm. See also Page 3, lns. 1-6 (“[F]orce-torque feedback is employed for transmitting *back to the operator* mechanical resistance encountered by the end effectors.”); Page 11, lns. 21-26 (“By using appropriate scaling and image magnification *and force and torque feedback*, and by locating the image 30V of the workspace 30 adjacent hand-operated control means 76R and 76L, *the operator is provided with a strong sense of directly controlling* the end effectors 40R and 40L.”).

Finally, all of this disclosure is consistent with the manner in which both the '193 and '640 patents use the term "original position" in describing the feedback control scheme for moving their robotic arm. Salisbury Decl. ¶¶ 22-24.

In short, based on all of these disclosures and the fact that "initial position" feedback control for robotic arms has been known and commonly implemented for decades, it is respectfully submitted that an ordinarily skilled reader of the '930 specification, as of the time the application was filed, clearly would have comprehended the disclosure of this well known subject matter inherent in the specification's explicit disclosures. Hence, the '930 application "reasonably convey[s]" to one skilled in the relevant art that the inventor, when the application was filed, "had possession of the claimed [position feedback control of robotic manipulators] invention." That is the natural and only reasonable conclusion possible under these circumstances. Salisbury Decl. ¶ 21. A contrary conclusion—that a reader of ordinary skill would not have recognized position feedback from the disclosure--would struggle greatly to ignore the plain import of the '930 application. *Id.*

B. ARTICULATE ELECTROCAUTERY INSTRUMENTS

Claims 122 and 131 have been rejected under §112, first paragraph, as allegedly lacking support for the claimed use of cauterizer tools mounted to articulate surgical instruments. Claims 122 has been amended to more clearly recite the claimed structure, and the following discussion is also relevant to claim 131. Claim 120 (from which claim 122 depends) recites an articulable endoscopic surgical instrument comprising a base, a pivot linkage, and a distal end. Claim 122 now recites that a cauterizer is attached at the distal end of the articulable surgical instrument.

Support for the claimed combination of elements recited by claim 122 is found in the originally filed application in the description of Figs. 7-11 from page 13, line 1, to page 19, line 7. More specifically, after a general description of a robotic system, the application

begins a description of a first surgical robotic systems as follows: "Reference is now made to Figs. 7 through 9 wherein a modified form of this invention is shown for medical use." Page 13, lines 1-3. The description of this embodiment includes a list of medical end effectors which can be attached at the distal end of the surgical instrument:

End effectors 114R and 114L simply may comprise, essentially, microsurgical instruments with their handles removed including, for example, retractors, electrosurgical cutters and coagulators, microforceps, microneedle holders, dissecting scissors, blades, irrigators, and sutures. Page 14, lines 21-26 (emphasis added).

The description of the medical embodiment of Figs. 7-9 continues to page 16, line 16, and is immediately followed by a description of an alternative medical embodiment of the robotic surgical system shown in Figs. 10 and 11. This alternative medical embodiment includes a manipulator 142 having an articulable medical instrument with a forearm 174, a wrist 172 pivotally coupled to the forearm, and a distal end effector 170 (page 17, lines 15-30), and is described for use in "biomedical use, such as remote laparoscopic surgery." Page 18, lines 3-6.

The written description explicitly links the surgical robotic system of Figs. 7-9 to that of Figs. 10 and 11 in at least two places. First, between the descriptions of these two surgical robotic systems, the application provides a transition as follows:

The present invention is not limited to use with manipulators having any particular number of degrees of freedom. Manipulators with different degrees of freedom which are well known in the art may be used in the practice of this invention. In Figs. 10 and 11, to which reference now is made, a controller 140 Page 16, lines 17-22.

Second, and perhaps even more clear, is the statement that appears near the end of the description of the embodiment of Figs. 10 and 11, and which again refers back to the previous embodiment of Figs. 7-9:

Controller 140 and manipulator 142 are included in a system such as shown in Figs. 7, 8, and 9 which includes a second controller and manipulator for use by the operator's right hand, and associated servomechanism means of any suitable type, not shown, for remote control of the manipulators by the hand-operated controllers. . . . By using manipulators with a wrist joint, an added degree of freedom is

provided for increased maneuverability and usefulness thereof. . . .
Page 18, lines 27-32.

Hence, the application clearly contemplated and disclosed that the medical robotic system described with reference to Figs. 7-9 would also benefit from the increased degrees of freedom provided by the wrist described with reference to the embodiment of Figs. 10 and 11. As the description of the embodiment of Figs. 7-9 clearly supports the use of electrosurgical cauterizers or coagulators, those of skill in the art would recognize that applicant clearly had possession of (and, in fact, would recognize that applicant actually and fully described) the combination of elements recited by amended claim 122, an articulable cauterizing surgical instrument.

C. LINEAR/ROTATIONAL ACTUATION

Claim 139 was rejected under §112, first paragraph, as allegedly lacking support for the claimed rotational and linear actuation structures. Such a rejection is traversed in-part and overcome in-part as follows:

Applicant has amended claim 139 to eliminate superfluous terms and more clearly claim the invention, and has canceled claim 140. As amended, claim 139 now effectively recites a mechanism that moves a surgical instrument, the mechanism including a first linkage arm coupled to the surgical instrument. The claim further recites a first actuator which can rotate said first linkage arm and the surgical instrument in a plane perpendicular to a first axis, with the first actuator being coupled to a linear actuator which can translate the linkage arm along an axis parallel with the first axis. This claim language, which substantially corresponds with claim 13 of the '640 patent, is fully supported by the originally filed specification of the '930 application, particularly with reference to Fig. 11 and the associated text.

Fig. 11 clearly shows a robotic mechanism with a linkage arm (forearm or shaft 174) extending through an aperture at a pivot point 176. Actuation of the mechanism along the axis of the linkage arm is identified by a straight or linear double-headed arrow 156M, and rotational actuation about the axis of the forearm shaft is identified by a curving or rotational double headed arrow 158M. Hence, this figure provides clear graphical support for actuation along an axis and rotation about that axis.

In addition to the graphical support for the claim language, after review of the written description of Fig. 11 removes any remaining doubt that the '930 application supports the lineal actuation claimed in claim 139. Specifically, the text describes the structure and use of several of the actuators illustrated in Fig. 11 as follows:

The outer operating end of the manipulator . . . includes an end effector drive motor 182 for opening and closing of gripper 170. Wrist drive motor 184 controls movement of wrist 172 in the direction of double-headed arrow 164M, and **extension drive motor 186 controls axial movement of manipulator arm 174 in the direction of double-headed arrow 156M.** Forearm pivotal control motors and linkages, identified generally by reference numeral 188, provide for pivotal movement of arm 174 about pivot point 176 in the directions of arrows 152M and 154M. Page 18, lines 9-21.

In fact, the '930 also describes the use of "linear" motors in connection with robotic manipulators on page 21, lines 29-35.

Regarding the combination of both linear and rotational actuation, the text of the '930 application includes the following description of the embodiment of Figs. 10 and 11:

Forearm 174 is longitudinally axially movable in the direction of double-headed arrow 156M in response to axial movement of outer section 150L2 of control arm 150L in the direction of double headed arrow 156. **It also is rotatable about its longitudinal axis in the direction of double-headed arrow 158M . . .** Page 17, lines 27-32.

The remaining text of the '930 application includes repeated support for combined lineal and rotational actuation. For example, the description of the robotic system and manipulator arm embodiments shown in Figs. 1-3 states:

Arm 34R includes telescopic inner section 34R1 and outer section 34R2, which outer section is adapted both for axial movement into and out of inner section 34R1 and for rotation about its longitudinal axis. . . . **Motor means, not shown, control . . . axial and rotary movement of outer arm section 34R2 along and about the longitudinal axis of the arm, . . .**" Page 6, lines 9-19.

This not only identifies the axial and rotary movement of a link in a robotic mechanism, but also recites the "motor means" or actuators for effecting that movement. Finally, in the

description of the surgical embodiment of Figs. 7-9, the text of the '930 application again describes robotic arm mechanisms using similar terms:

The insertion sections 100RB and 100LB of the manipulators may be of substantially the same design as manipulator arms 34R and 34L described above with reference to the Figs. 1-3 embodiment. The insertion sections are of relatively small size for use inside the body. Insertion section 100RB includes telescopic inner section 112R1 and outer section 112R2, which outer section is adapted for both axial movement into and out of inner section 112R1 and for rotation about its longitudinal axis. Page 14, lines 3-12.

In light of the explicit description and illustration (in Fig. 11) of extension drive motor 186, the specific disclosure of linear motors, and in light of the multiple descriptions of linear and rotational actuation as well as the "motor means" for providing that actuation, there can be little doubt that those of skill in the art would know that the applicants had described a combination of a linear actuator for actuation along an axis (156M) and a coupled actuator to effect rotational movement about that axis (158M) as recited by claim 139.

II. REJECTION UNDER 35 U.S.C. §135(b)

To continue with the issues raised by the Examiner in the Office Action of February 11, 2000, in the order in which the issues were raised, applicant will now address the rejections of claims 138-141 under 35 U.S.C. §135(b). After a brief section reviewing the factual background, applicant will explain why the case law does not support a rejection of the claims, and why issuance of the '640 patent should not be disregarded. Applicant will further apply the policy underpinning §135(b) to the present application to establish that §135(b) should not prevent applicant from provoking the requested interference.

A. BACKGROUND

On September 29, 1998, the PTO issued U.S. Patent No. 5,815,640 ("the '640 patent") to Wang et al. Less than ten months later, on July 14, 1999, Applicant filed a "Third Supplementary Preliminary Amendment and Request for Interference with U.S. Patent No. 5,815,640 under 37 C.F.R. §1.607" (hereinafter "the Amendment"). The Amendment added

six claims – claims 138-143 – to Applicant’s U.S. Patent Appl. No. 08/709,930. Four of these six claims – claims 138-141 – exactly copied claims 8, 13, 14, and 19 of the ‘640 patent, respectively.

Public interest favors allowing third parties to challenge the validity of patents issued by the PTO. One of the fundamental avenues for challenging issued patents consists of permitting a third party to provoke an interference between the issued patent and a pending application by copying claims from the issued patent into the application. Since public interest also favors a patentee having some security in its granted property rights, however, the law limits the ability of a third party to copy claims from a particular issued patent by requiring such claims to be copied *within one year of issuance of that patent*. 35 U.S.C. §135(b); 37 C.F.R. §1.607(a)(6). Since the claims in this case unquestionably were copied within one year – actually within ten months – of issuance of the ‘640 patent, and since the ‘640 patent was subject to the Applicant’s request for interference based on the copied claims, that should have ended the section 135(b) inquiry in this case.

In the February 11, 2000 Office Action, however, the Examiner rejected claims 138-141 under 35 U.S.C. §135(b) for failing to file the Amendment within one year of issuance, not of the ‘640 patent, but of an earlier, related patent, U.S. Patent No. 5,524,180 (“the ‘180 patent”), which issued on June 4, 1996 also to Wang et al. (Both the ‘180 and ‘640 patents are assigned to Computer Motion, Inc.). The Examiner reasoned that since the four claims copied from the ‘640 patent also covered substantially the same subject matter as claims 15, 20, 21 and 26 of the earlier ‘180 patent, the Amendment violated section 135(b). [Office Action at 7-8] As support for his position, the Examiner cited In re McGrew, 120 F.3d 1236, 43 USPQ2d 1632 (Fed. Cir. 1997).

B. MCGREW DOES NOT SUPPORT THE EXAMINER’S POSITION

In re McGrew does not support the Examiner’s position that claims copied from a patent within one year of issuance of that patent can properly be rejected under section 135(b). In McGrew, an undisputed *three-plus year hiatus* existed between when the patent in question issued and when the third party filed claims covering substantially the same subject matter as claims of the issued patent. 120 F.3d at 1236. Not surprisingly, therefore, the Federal

Circuit affirmed the Board's decision that the Applicant had violated the one-year period of section 135(b). Unlike the present case, McGrew did not even remotely involve a patent (i) covering the same subject matter as the later filed claims, and (ii) issuing within one year of when the later claims were filed. ²Thus, McGrew does not govern analysis of the present case, since here, a patent *did* issue within one year of when the copied claims were filed.³ Even the language of section 135(b) supports Applicant's efforts in this case. Under section 135(b), upon issuance of a patent, a third party has a statutory right to file claims to "the same . . . or . . . substantially the same subject matter as[] a claim of *an* issued patent" as long as those claims are filed "prior to one year from the date on which *the* patent was granted." Id. (emphasis added). In this case, "*the* patent" as described in the last phrase of section 135(b) is the '640 patent, *not* the '180 patent, since the claims were copied from the '640 patent, not the '180 patent, and since the Applicant is requesting an interference with the '640 patent, not the '180 patent.

²Had the PTO not issued the '640 patent, and had the Applicant instead copied claims from the earlier '180 patent and requested an interference with the '180 patent, then the present case would be on all fours with the facts of McGrew and the Applicant would have no complaint with the Examiner's section 135(b) rejection. But those clearly are *not* the facts of this case.

³ The Federal Circuit's reasoning behind the McGrew decision sheds further light on why that case does not support the PTO's position. In McGrew, in explaining why a third party could not be allowed to attack a patent more than three years after issuance, the Court and Board both agreed in their rationale that the one year period of section 135(b) acts essentially as

a statute of repose . . . a statute of limitations, so to speak, on interferences so that the patentee might be more secure in his property right. * * * If persons . . . could copy claims from issued patents beyond the time when an interference could be declared and obtain patents on them simply on the grounds that they are prior inventors and did not know about the patent in time to contest an interference, section 135(b) would not be effective as a statute of repose. 120 F.3d at 1237, 1238.

Here, no concern regarding application of a statute of repose, or concern about the patentee's security with respect to his property rights in the '640 patent, is at issue. Since Applicant copied claims from the '640 patent within one year of issuance of that patent, that is all the law asks.

C. ISSUANCE OF THE '640 PATENT CANNOT BE DISREGARDED

It appears that the PTO may now regret issuance of the '640 patent, based on the Examiner's reasoning that the claims of the '640 patent substantially correspond to the claims of the earlier, related '180 patent. The PTO may now believe that the '640 patent should not have issued, since the Examiner's comments that both the '640 and '180 patents are directed to subject matters not patentably distinct from one another obviously raise serious double patenting concerns.⁴ However, the simple fact is that the PTO *did* issue the '640 patent, and *it remains in effect to date*. The PTO cannot now simply choose to overlook that it issued the '640 patent in an effort to try to deny the Applicant his statutory right to copy claims from *that* patent within one year of issuance of *that* patent. Simply put, to deny the Applicants the right now to attack issuance of the '640 patent, if indeed it was issued improperly, doubles the damage done to the public as a result of issuance of that invalid patent by allowing it to stand unchallenged.

Moreover, even assuming that the patentee of the '180 and '640 patents was entitled to quiet enjoyment of the subject matter of the '180 patent once the year-long period after issuance of the '180 patent expired, the patentee *relinquished* that right to repose once it voluntarily allowed virtually duplicate claims to issue in the '640 patent. Having now chosen to *put that subject matter back into play*, neither the patentee nor the PTO should be heard to complain that copying claims within one year of issuance of the later '640 patent somehow still does not satisfy the one-year requirement of section 135(b) because of the stale '180 patent.

**D. IN LIGHT OF MULTIPLE, RELATED PATENTS SUBJECT TO
APPLICANT'S REQUESTS FOR INTERFERENCE, RESOLVING THIS
ISSUE IN APPLICANT'S FAVOR MAKES SENSE**

Finally, and perhaps most importantly, were the '640 patent the only patent subject to a request for interference by Applicant, the parties might be able to consider the

⁴ Interestingly, the Board of Patent Appeals and Interferences stated in its McGrew decision (that led to the Federal Circuit appeal) that "knowingly to permit two patents to issue for the same invention" would violate "the fundamental proposition" that "only one valid patent can issue on the same invention." 120 F.3d at 1237.

section 135(b) issue in isolation and resolve it accordingly. However, the Applicant has requested that an interference be declared between his '930 application and *five* interrelated patents: U.S. Patent Nos. 5,762,458, 5,855,583, 5,878,193, 5,815,640, and 5,907,664, all of which issued to Wang et al. and are presently assigned to Computer Motion, Inc.

Three of these patents – the last three listed – are in the same patent family. Indeed, U.S. Patent No. 5,878,193 (“the ‘193 patent”) and the ‘640 patent, which issued only about five months apart, are directed to substantially related subject matter from a method and apparatus point of view, respectively. Compare claim 1 of the ‘193 patent with claim 8 of the ‘640 patent, both of which are reproduced in-part below.

‘193 Patent, Claim 1

A method for allowing a user to remotely control a movement of a surgical instrument having a tip, the method comprising the steps:

- a) establishing an original position of the surgical instrument tip;
- a) inputting a command . . . to move the surgical instrument in a desired direction relative to an object displayed on a display device;
- a) computing an incremental movement of the . . . instrument based on the command . . . and on the original position . . . ; [and]
- a) moving the . . . instrument in the desired direction

‘640 Patent, Claim 8 (with letters added to aid identification of correspondence between claims):

A system that allows a user to control a movement of a surgical instrument, . . . , comprising:

- a) a mechanism that moves the surgical instrument, said mechanism having an original position;
- b) an input device that receives a command to move the surgical instrument in a desired direction relative to the object displayed by the display device; [and]
- c) a controller that . . . computes a movement of said mechanism based on said command and the original position of said mechanism so that the . . .
- d) instrument moves in the desired direction, and provides output signals . . . to move the surgical instrument in the desired direction

To try to challenge this related subject matter in an efficient and sensible manner, Applicant copied claims from both of these patents within one year of issuance of both. Assuming that

the Examiner is of the view that an interference should be declared between the present '930 application and the '193 patent, allowing the Board to consider the subject matter of the '193 patent without also permitting the Board to consider the substantially related '640 patent in the same proceeding (or *vice-versa*) would work an additional injustice, and would violate the letter and spirit of 37 C.F.R. §1.601, which establishes that interferences are to be conducted "to secure the just, speedy, and inexpensive determination" of parties' rights. As a simple matter of sensible conservation of resources, it is respectfully submitted that it makes no sense to split these cases up and consider the patents' common issues in separate paths as a result of an erroneous application of McGrew.

E. CONCLUSION OF §135(b) ISSUE

Thus, for all the reasons given above, Applicant respectfully submits that under the circumstances, section 135(b) must be deemed satisfied for purposes of copying claims from, and requesting an interference with, the '640 patent.

III. ARGUMENTS OVERCOMING SELECTED PRIOR ART REJECTIONS

Departing now from the order of the issues raised in the Office Action of February 11, 2000, the Examiner has rejected claims 129 and 143 under 35 U.S.C. §102(e) over U.S. Patent No. 5,217,003 to Wilk ("Wilk"). Specifically, for both rejections, the Examiner stated that Wilk discloses "a forearm, a wrist, and an end effector [in that] . . . the instrument rotates and jaws close which requires the use of a wrist." Office Action at 11, 12-13 Even assuming the Wilk reference to be prior art to the '930 application, which the applicants do not traverse at this time, the rejection of claims 129 and 143 is respectfully traversed for the following reasons.

As disclosed in the specification of the present '930 application, for example, in Fig. 11 and page 17, lines 15-26, the articulable surgical instrument comprises a forearm 174, a wrist linkage 172 movably coupled to the forearm, and an end effector 170 movably coupled to the wrist. In other words, there are two joints involved, the joint between the forearm and the wrist – the wrist joint – and the joint between the wrist and the end effector – a second joint distal of the wrist joint. These two distal joints are distinct. The disclosure of the '583 patent, to which pending claim 129 substantially corresponds, is also consistent. See, e.g., the '583

patent, Fig. 15, described at col. 16, lns. 38 to col. 17, line 41 as having a proximal portion 308 and a distal portion 312 coupled together about the first joint (shown in exploded view in Fig. 15) and the end effector joint distal of the first joint, around which end effector 306 rotates to interact with end effector 308. This '583 patent structure therefore also discloses two discrete joints. Wilk, however, discloses no such structure having two distinct distal joints. Instead, only one joint is disclosed, the joint around which the "forceps jaws 21" of the "forceps instrument 20" close. Wilk discloses no other distal joint. Thus, at least for these reasons, Wilk cannot anticipate pending claims 129 and 143. Therefore, claims 129 and 143, and claim 130 dependent upon claim 129, are patentable over Wilk and the §102(e) anticipation rejection should be withdrawn.

IV. CORRESPONDENCE OF ALLOWABLE CLAIMS TO THE PATENT CLAIMS

Applicant has amended and added claims to expedite declaration of the requested interference proceedings. From these amendments and the arguments herein, applicant seeks to ensure allowance of at least one claim corresponding to each of the counts proposed in the five Preliminary Amendments filed between May 1999 and July 1999 for this case. Applicant respectfully submits that allowability of corresponding claims for each and every proposed count can be established by addressing two issues: deletion of the "passive joint" element of previous claim 106, and the addition of new dependent claims 147-151.

A. PASSIVE JOINT

Previous claim 106 corresponded exactly to claim 1 of the '458 patent. Claims 111 and 112 previously depended from claim 106, which was rejected under §112, first paragraph, as allegedly lacking support for the recited "passive joint" element. Applicant has canceled claim 106, has amended claim 113, and has revised the dependency of claims 111 and 112. It is now respectfully submitted that dependent claims 111 and 112 are allowable over the cited art for the reasons supporting the allowability of previous claims 111 and 112, and amended dependent claims 111 and 112 substantially correspond to claims 7 and 8 of the '458 patent as described in the following sections.

1. CLAIMS 111 AND 112 ARE ALLOWABLE

Applicants have amended claim 113 so as to include every element (or a substantially corresponding element) of claim 106, with the sole exception of the "passive joint" element. Specifically, claim 106 included the following elements:

106. A medical robotic system that can be inserted through a first incision of a patient and controlled by a surgeon comprising:
a first articulate arm which has a passive joint that is coupled to a first end effector inserted into the incision, wherein the incision defines a first pivot point for said first end effector;
a first input device that creates a first input command in response to an instruction from the surgeon; and,
a controller that is coupled to said first input device and said first articulate arm, said controller receives said first input command from said first input device and provides a first output command to said first articulate arm to move said first end effector relative to the first pivot point.

As amended, claim 113 now recites:

113. A medical robotic system that can be inserted through a first incision of a patient and controlled by a surgeon comprising:
a first articulate arm with a first end effector, wherein the end effector pivots about a first pivot point disposed at the first incision;
a first input device that creates a first input command in response to an instruction from the surgeon; and,
a computer that is coupled to said first input device and said first articulate arm, said computer receives said first input command from said first input device and provides a first output command to said first articulate arm to move said first end effector relative to the first pivot point.

As can be seen from a review of these two claims, the only substantive difference is the recited structure and use of a passive joint. However, as properly noted by the Examiner in rejecting claim 106 on page 9 the Office Action of February 11, 2000, "Taylor et al. teaches a medical robotic system . . . having a passive joint (214) that is coupled to an end effector (236, 237)." Taylor, however, is not the only prior art reference that discloses such a passive joint. The Putman reference, U.S. Patent No. 5,184,601, for example, also discloses a passive joint (Fig. 8, and Col. 8, lns. 4-12, "rotatable coupler 102"). In light of these disclosures of the "passive joint" limitation in the prior art, it must be acknowledged that the

claims of the '458 patent corresponding to pending claims 111 and 112 were previously deemed to be allowable based on the combination of elements these claims recite (rather than the "passive joint" limitation itself).⁵ Now that claims 111 and 112 depend from claim 113, that same combination of elements should still support allowability of those claims to applicant.

2. CLAIMS 111 AND 112 SUBSTANTIALLY CORRESPOND TO CLAIMS 7 AND 8 OF THE '458 PATENT

Claims 113, 111, and 112 substantially correspond to claims 1, 7, and 8 of the '458 patent, respectively, despite the absence of the passive joint element, because the passive joint an "immaterial element" of these claims under interference practice. As explained in §2306 of the M.P.E.P.:

It should be emphasized that the requirement that the claims of the application and of the patent define the same patentable invention in order for an interference to exist does not mean that the application claim or claims must necessarily be identical to the corresponding claim or claims of the patent. All that is required under present practice is that a claim of the application be drawn to the same patentable invention as a claim of the patent. An application is considered to be drawn to the same patentable invention as a patent claim if it recites subject matter which is the same as (35 U.S.C. 102) or obvious in view of (35 U.S.C. 103), the subject matter recited in the patent claim. 37 CFR 1.601(n). The test is analogous to that applied for double patenting; i.e., if the applicant's claim would have been subject to a double patent rejection of the . . . "obviousness" type (MPEP §804) if the patent and application were by the same inventive entity, then the application and patent are directed to the same invention. (emphasis added)

This aspect of interference practice becomes clearer after reviewing Example 19 given in §2309.02 of the M.P.E.P.:

Application AC contains patentable claim 8 (method of mixing and heating) and does not disclose or claim a grinding step. In the context of

⁵ Interestingly, the claims of the '458 patent were allowed to issue without consideration of either the Putman or Taylor (U.S. Patent No. 5,279,309) "passive joint" references.

the inventions disclosed in patent J and application AC, a method of mixing, grinding, and heating is the same patentable invention as a method of mixing and heating. Under current practice, it would be said that "grinding" is an "immaterial" limitation

Applying this analysis to the present situation, it is clear that claims 1, 7, and 8 of the '458 application define the same patentable invention as claims 113, 111, and 112 of the present application, respectively, as each of these claims of the patent would be obvious in light of the respective claims of the application. More specifically, as the *sole* substantive difference between the claims of the '458 patent and pending claims 111-113 – the "passive joint" – is well known in the art, as previously established by the Examiner in the February 11, 2000 Office Action, the claims of the '458 patent would be obvious over claims 111-113 in view of the Taylor et al. and/or Putman references, e.g. Hence, claims 1, 7, and 8 of the '458 patent define the same invention as do amended pending claims 113, 111 and 112, respectively, and per the M.P.E.P.'s guidance, the "passive joint" limitation should be considered an "immaterial limitation" that cannot properly preclude declaration of an interference between the '458 patent and the present '930 application.

B. THE ADDED CLAIMS

Regarding added claims 147-151, these claims depend from claims 113, 116, 127, 132, and 142, respectively. These added claims recite structural and/or method elements corresponding to the elements of claim 144, which was allowed in the Office Action of February 11, 2000. In fact, these dependent claims were drafted with the goal of effectively including every substantive element of allowed claim 144 (or the method counterpart thereof.) Hence, claims 147-151 are allowable for the reasons supporting allowability of claim 144.

Added claims 147-151 substantially correspond to claims of the '458, '193, '583, '583 (for which two counts have been proposed), and '640 patents, respectively. This is clear upon review of the claims in light of §2306 of the M.P.E.P as quoted above, as every element of at least one claim from the patent would be obvious in light of the associated added claim. More specifically, applicant notes that:

Added claim 147 depends from claim 113, which substantially corresponds with claim 1 of the '458 patent. Claim 1 of the '458 patent is the same patentable

invention as claim 147, as claim 1 of the '458 patent is obvious in light of claim 147.

Added claim 148 depends from claim 116, which substantially corresponds with claim 1 of the '193 patent. Claim 1 of the '193 patent is the same patentable invention as claim 148, as claim 1 of the '193 patent is obvious in light of claim 148.

Added claim 149 depends from claim 127, which substantially corresponds with claim 1 of the '583 patent. Claim 1 of the '583 patent is the same patentable invention as claim 149, as claim 1 of the '583 patent is obvious in light of claim 149.

Added claim 150 depends from claim 132, which substantially corresponds with claim 9 of the '583 patent. Claim 9 of the '583 patent is the same patentable invention as claim 150, as claim 9 of the '583 patent is obvious in light of claim 150.

Added claim 151 depends from claim 142, which substantially corresponds with claim 8 of the '640 patent. Claim 8 of the '640 patent is the same patentable invention as claim 147, as claim 8 of the '640 patent is obvious in light of claim 151.

Hence, claims 147-151 are allowable for the reasons supporting allowability of claim 144, and these claims correspond with claims of the '458, '193, '583, and '640 patents.

V. INITIATION OF INTERFERENCE PROCEEDINGS

Applicant acknowledges that the Examiner has thoroughly and diligently searched the art, and has initially substantively rejected claims 106, 107, 113, 114, 116-118, 123-130, 132-135, 137, 142, and 143 under 35 U.S.C. §§102 and/or 103 as allegedly being unpatentable over one or more of the following references: U.S. Patent Nos. 4,979,949 (issued to Matsen, III et al.), 5,078,140 (issued to Kwoh), 5,184,601 (issued to Putman), 5,217,003 (issued to Wilk), and 5,279,309 (issued to Taylor et al.), and an article entitled "Force Feedback-Based Telemicromanipulation for Robot Surgery on Soft Tissues," by Sabatini et al. As noted above, applicant has reserved the right to further prosecution of canceled claims 106, 108-110, 114, 117, 128, 133-137, 140, and 146, which were canceled solely to simplify the numerous issues presented in this application. Similarly, for the reasons described below,

applicant further reserves the right to specifically address each of the prior art rejections after applicant's rights to these inventions have been established in interference proceedings.

Applicant sincerely and gratefully acknowledges the thoroughness and the amount of time and effort devoted by the Examiner and the Examiner's supervisor to the substantial task of examining the present application. Nonetheless, applicant first requested an interference almost a year ago in a Preliminary Amendment filed for this case in May, 1999. Applicant notes that §2307.02 of the M.P.E.P. states:

When claims corresponding to claims of a patent are presented, the application is taken up at once and the examiner must determine whether the presented claims are unpatentable to the applicant on any ground(s), e.g., under 35 U.S.C. 102, 35 U.S.C. 103, 35 U.S.C. 112, 35 U.S.C. 135 (b), double patenting, etc. If at least one of the presented claims is not rejectable on any such ground and is claiming the same invention as at least one claim of the patent, the examiner should proceed to initiate an interference. (emphasis added)

Applicant has gratefully acknowledged the allowance of claims 144 and 145, as well as the indicated substantive allowability of claims 119-121. Per the Examiner's instruction that it will be a prerequisite for declaring the interference, applicant has amended claims 119-121 to comply with the Examiner's requirements of form. Hence, applicant has met all criteria for provoking interferences with the '583 and the '664 patents. In fact, per §2307.02, all interference criteria were met for both of these patents some time ago, as claims 119-121 were never rejected, but were merely objected to. As applicant understands the section of the M.P.E.P. recited above, these first two interference proceedings **should have already been initiated**, and applicant respectfully requests that they now be initiated with special dispatch per §1.607(b).

While in final preparation for filing of the present amendment, Intuitive Surgical, Inc., exclusive licensee of the '930 patent, received a copy of a Summons and Complaint purportedly filed in the United States District Court in the Central District of California. The Summons and Complaint are attached as Appendix D, and indicate that Computer Motion has filed an action for patent infringement against Intuitive Surgical, Inc., based on the '458, '193, '583, '640, and '665 patents, together with U.S. Patent Nos. 5,524,180 (also addressed above) and 6,001,108. As the attached complaint and summons clearly

demonstrate, time is of the essence in this case. Almost a full year has passed since an interference was first requested. The issues raised in this amendment, and in the attached complaint, should be resolved by Patent Office interference proceedings, and those proceedings must be initiated as soon as possible.

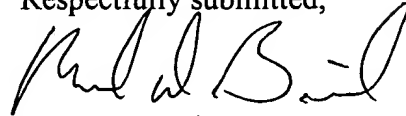
With the arguments and amendments provided above, in combination with the five previously filed Preliminary Amendments, applicant has fully established applicant's right to provoke interferences with U.S. Patent Nos. 5,762,458; 5,878,193; 5,855,583; 5,815,640; and 5,907,664. Applicant notes that no additional Office Action is required to move this matter into one or more interferences, and that the associated delay in advancing toward resolution would be contrary to 37 C.F.R. §1.601, which indicates that the rules are to be interpreted so as to secure the just, speedy, and inexpensive determination of **every** interference. If any formalities or substantive issues remain unresolved after consideration of this amendment, the Examiner is strongly encouraged to telephone Applicant's undersigned representative at the Examiner's earliest convenience, so that applicant can eliminate such remaining issues from this case and, as necessary, pursue the matter in a subsequently filed application.

VI. CONCLUSION

In light of the previously indicated allowability of claims 119-121, 144, and 145, and further in light of the allowability of at least claims 111, 112, 115, 122, 129-131, 138, 139, 141, 143, and added claims 147-151 as described above, applicant is now entitled to an interference with each of U.S. Patent Nos. 5,762,458; 5,878,193; 5,855,583; 5,815,640; and 5,907,664. As applicant initially requested the first of these interference proceedings almost one full year ago on May 28, 1999, and as such a request should be examined with "special dispatch" under 37 C.F.R. §1.601(b), the declaration of an interference with each of these patents at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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